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# HAPCO STREET LIGHTING STANDARDS



**HUBBARD ALUMINUM PRODUCTS COMPANY**

MANUFACTURER OF HAPCO QUALITY ALUMINUM PRODUCTS

*A Division of HUBBARD and COMPANY*

6301 Butler Street • Pittsburgh 1, Pa.

CAT. NO. HAL 452









# **HAPCO**

## **STREET LIGHTING STANDARDS**

The Hubbard Aluminum Products Company, a new division of Hubbard and Company, is proud to present to the Electrical Industry the comprehensive line of Aluminum Alloy Street Lighting Standards, Special Poles, and Accessories which appear in the following pages. While HAPCO products are regarded as a new and important contribution to the advancement of the art in electrical construction, they are also fully in keeping with the century-old tradition of Hubbard quality in materials, workmanship, and service to a great and continually growing industry.

# **HUBBARD ALUMINUM PRODUCTS COMPANY**

*Division of HUBBARD and COMPANY*







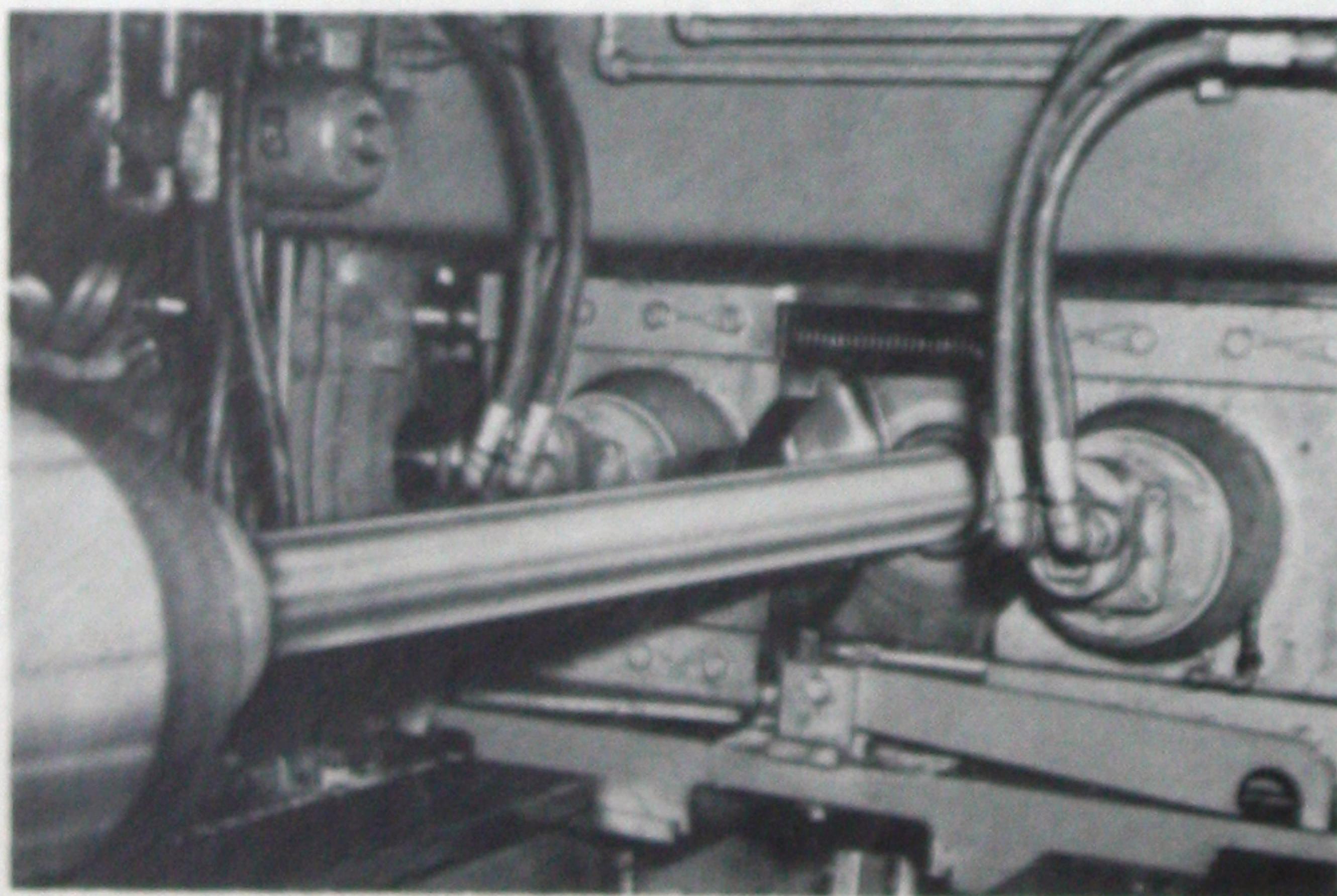
Typical Installation of Hapco Aluminum Alloy Street Lighting Standards on an eastern parkway

## The Story Behind HAPCO Street Lighting Standards

For some time professional engineers as well as the general public have been aware of the extraordinary increase of Aluminum Alloys for structural and architectural applications. These uses have been made possible by the advances made in the alloying of Aluminum so as to achieve maximum corrosion resistance, together with heat-treatability, which in turn produces strengths far in excess of the pure metal.

The HAPCO process of manufacture takes full advantage of these properties. All HAPCO Street Lighting Standards have one-piece shafts spun to the desired taper from seamless, extruded Aluminum Alloy tubing. The spinning is accomplished entirely in one pass by the patented Dewey Process, on a machine especially designed and built for HAPCO. Since no forms or mandrels are used to taper the Pole shaft, HAPCO has great flexibility in varying tapers to suit individual requirements.

Tapering on this pole is about one-third complete. Note the tapering unit and roller to the right center of the illustration



After tapering, the Pole shaft is given a precipitation heat-treatment in a precision oven designed to maintain extremely close temperature regulation, thereby producing consistent tensile characteristics in the alloys.

All load bearing parts of HAPCO Poles, such as Bases, Bracket Supports, etc., are made of heat-treated alloy castings which become a permanent part of the shaft by inert gas shielded arc welding. All HAPCO welding is performed with



the most modern Aircomatic equipment, insuring welds of uniform high quality.

HAPCO Pole shafts are finished by grinding the entire shaft surface on a special setup. This prepares the surface of the Pole so that it will acquire a uniform Aluminum oxide film with a silver-gray mat finish. This is most desirable for non-reflecting and for architectural effect. Perfection of finish is further assured by "tire-wrapping" the entire Pole, including base, which protects the Pole during shipment and installation.

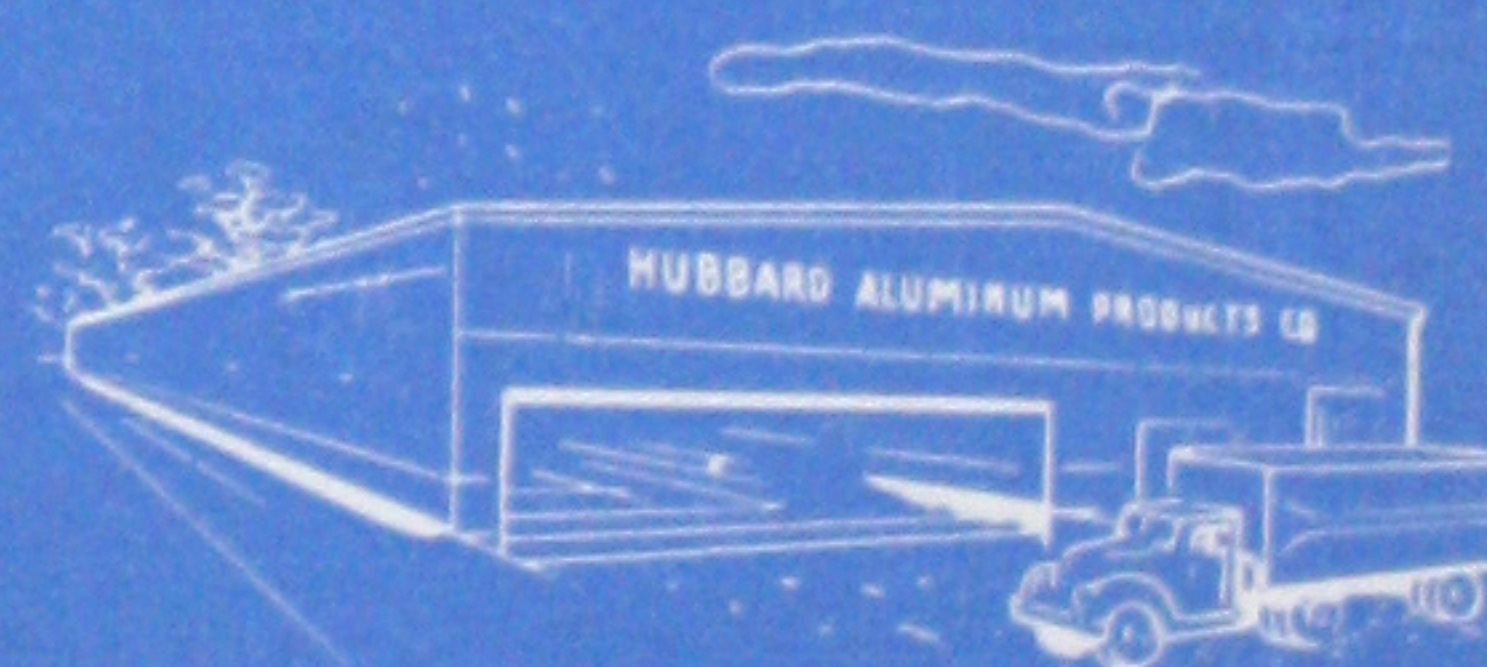
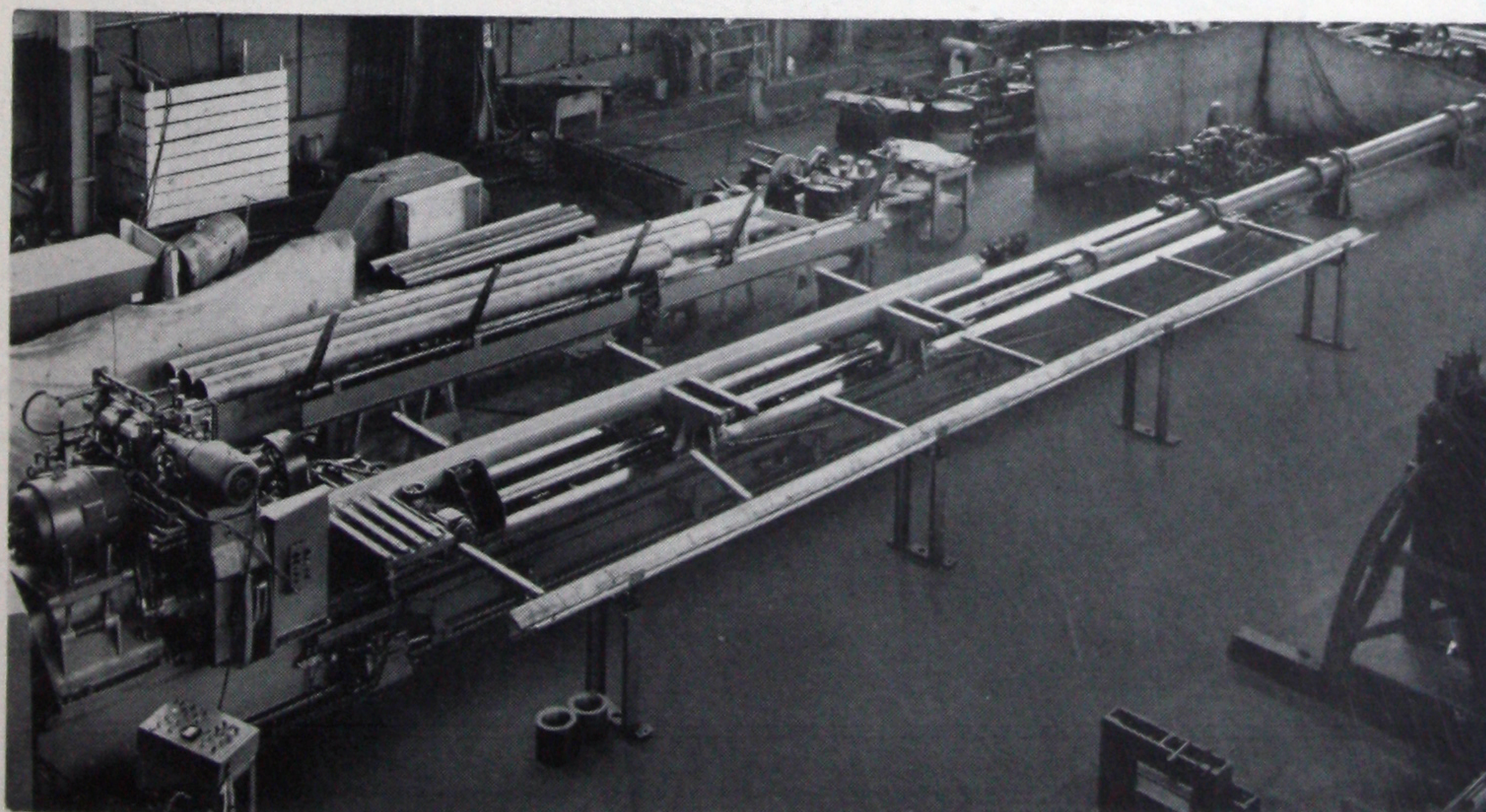
All operations from raw material to finished wrapped product are conducted entirely in the new modern plant of the Hubbard Aluminum Products Company, with every detail of manufacture subject to constant engineering control. The special techniques required for successful manufacture of heat-treated Aluminum Alloy products cannot be successfully combined with production of other materials; hence the new and modern facilities of the HAPCO plant are of great interest to the careful purchaser. A review of HAPCO SPECIFICATIONS and TECHNICAL DATA, on pages 12 and 13, will convince the engineer that the highest standards of quality are adhered to in all parts of HAPCO Street Lighting Standards.



All Hapco welding is performed with the most modern Aircomatic equipment, inert gas shielded, insuring welds of uniform high quality

### Why the HAPCO Pole Will Serve You Best

1. One-piece construction in all lengths to 40 ft. No longitudinal seams or transverse joints.
2. Heat-treated alloys used throughout, give consistently uniform high strength.
3. Designed for either overhead circuits or underground wiring.
4. Venetian column type of taper acclaimed by architects.
5. No forms or mandrels used to shape pole. Taper can be varied to suit individual requirements.
6. Light weight cuts installation cost.
7. Entire surface ground to mat finish which gives best surface for non-reflecting, durable oxide film.
8. No painting needed at any time. Saves maintenance cost.

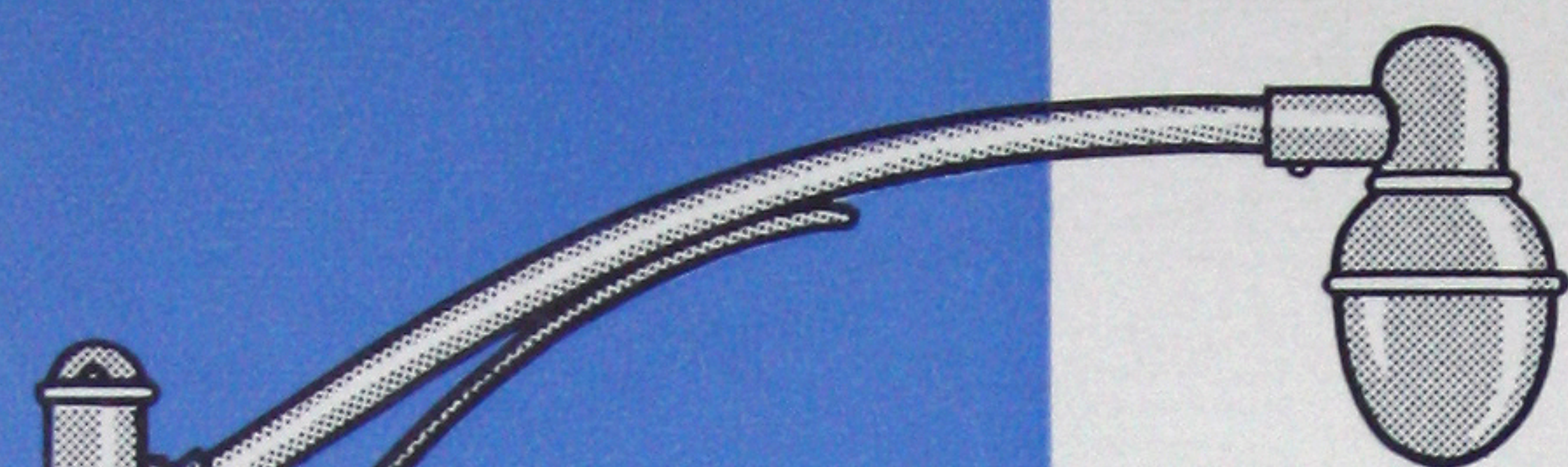


General view of the patented, Dewey process machine, built especially for Hapco





## STREET LIGHTING STANDARDS



### LIGHTING STANDARDS 1 and 1-T Bracket Style "B"

#### POLE TYPE 1 — BRACKET STYLE "B"

NOMINAL MOUNTING HEIGHT	BRACKET LENGTHS IN FEET CATALOG NUMBERS				BOLT CIRCLE	NOMINAL SHAFT SIZE
	3 FEET	4 FEET	6 FEET	8 FEET		
21'-0"	12420B3	12420B4	.....	.....	9 1/2"	6"x4"x20'-0"
21'-0"	12820B3	12820B4	12820B6	12820B8	10"	7"x4"x20'-0"
23'-6"	12822B3	12822B4	12822B6	12822B8	10"	7"x4"x22'-6"
26'-0"	.....	12825B4	12825B6	12825B8	10"	7"x4"x25'-0"
26'-0"	.....	13225B4	13225B6	13225B8	11"	8"x4"x25'-0"
28'-6"	.....	13227B4	13227B6	13227B8	11"	8"x4"x27'-6"
31'-0"	.....	13230B4	13230B6	13230B8	11"	8"x4"x30'-0"
33'-6"	.....	13232B4	13232B6	13232B8	11"	8"x4"x32'-6"
36'-0"	.....	13235B4	13235B6	13235B8	11"	8"x4"x35'-0"

#### POLE TYPE 1-T — BRACKET STYLE "B"

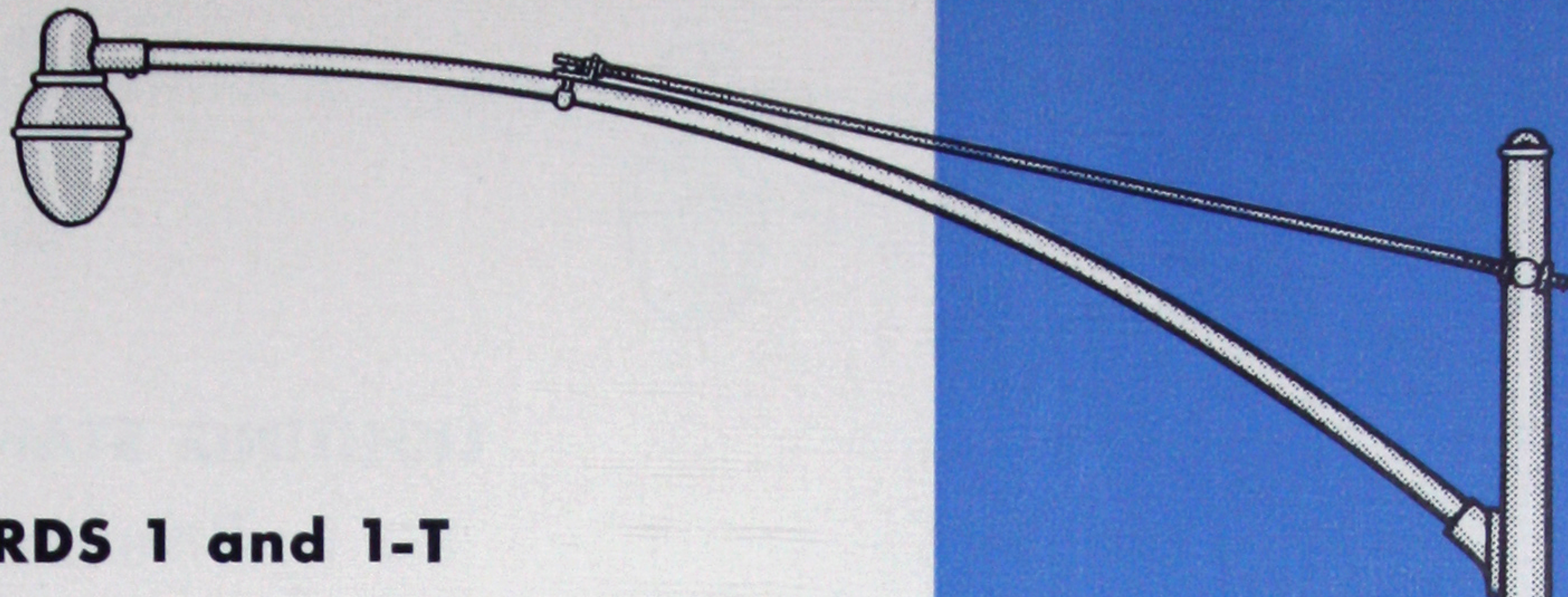
21'-0"	1T2820B3	1T2820B4	1T2820B6	1T2820B8	15"	7"x4"x18'-4"
23'-6"	1T2822B3	1T2822B4	1T2822B6	1T2822B8	15"	7"x4"x20'-10"
26'-0"	.....	1T2825B4	1T2825B6	1T2825B8	15"	7"x4"x23'-4"
26'-0"	.....	1T3225B4	1T3225B6	1T3225B8	15"	8"x4"x23'-4"
28'-6"	.....	1T3227B4	1T3227B6	1T3227B8	15"	8"x4"x25'-10"
31'-0"	.....	1T3230B4	1T3230B6	1T3230B8	15"	8"x4"x28'-4"
33'-6"	.....	1T3232B4	1T3232B6	1T3232B8	15"	8"x4"x30'-10"
36'-0"	.....	1T3235B4	1T3235B6	1T3235B8	15"	8"x4"x33'-4"

- Note 1. All Pole numbers include four 1 by 36-inch galvanized steel Anchor Bolts for each Pole.
- Note 2. All Pole numbers can be supplied with Twin Brackets. Specify "Twin" after catalog number.
- Note 3. Standard shaft wall thickness 3/16-inch. (See SPECIFICATIONS, page 12.) (Other wall thicknesses available on special order.)
- Note 4. Alloys and tempers of all parts listed in SPECIFICATIONS, page 12.
- Note 5. Mounting heights given, indicate distance from top of foundation to center line of Bracket where luminaire attaches. Dimensions given are for 6-ft. Brackets only.
- Note 6. Brackets normally supplied with 1 1/4-inch slip-fitter end. May also be furnished in 2-inch slip-fitter, 2-inch threaded end, or 1 1/4-inch threaded end if specified.
- Note 7. For Bracket mounting details and base dimensions, see DETAILS, page 10.
- Note 8. Handholes and other accessories available. See page 11.

POLE TYPE No. 1 Standard Base      POLE TYPE No. 1-T Transformer Base



# STREET LIGHTING STANDARDS



## LIGHTING STANDARDS 1 and 1-T Bracket Style "L"

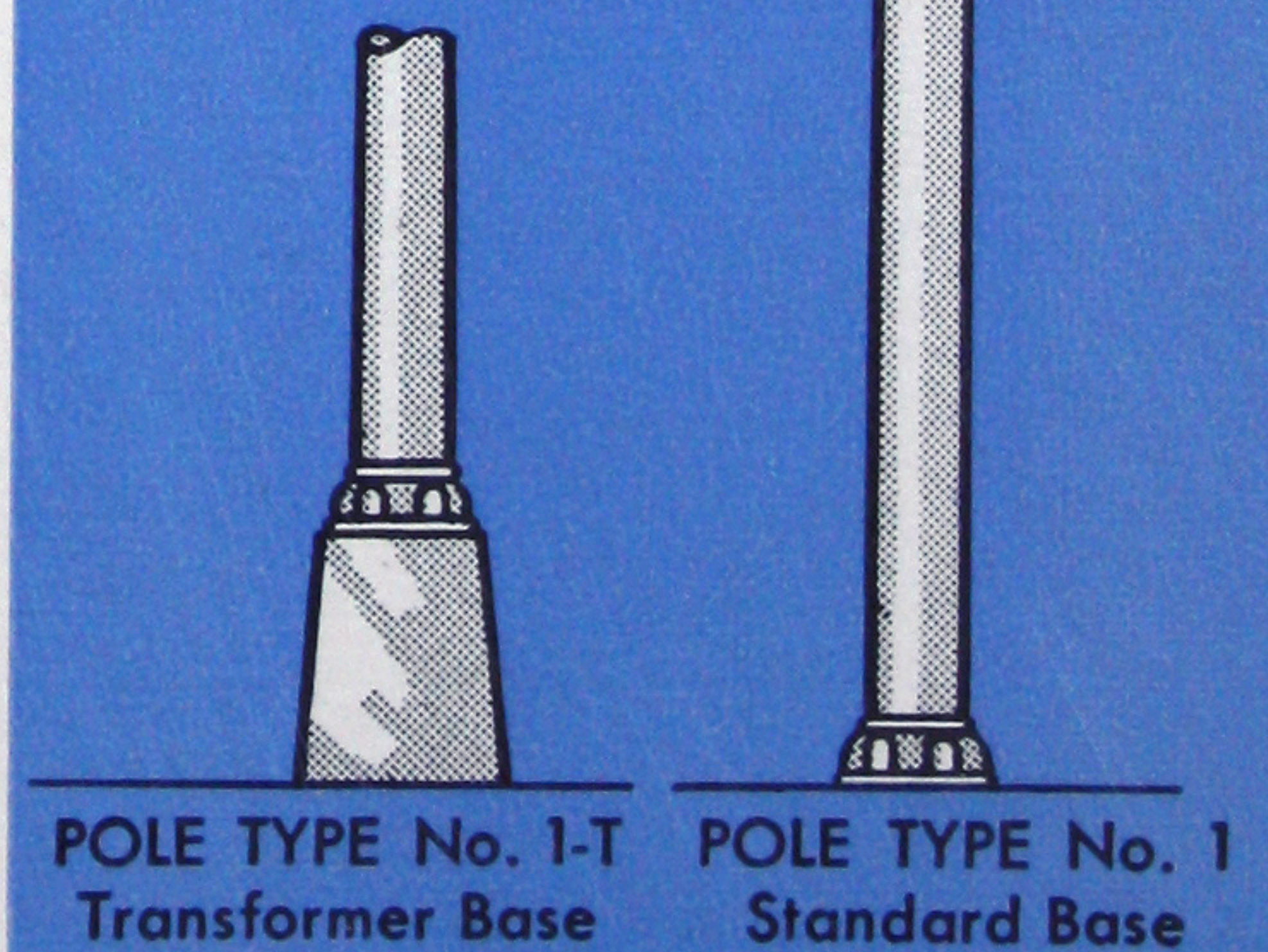
### POLE TYPE 1 — BRACKET STYLE "L"

NOMINAL MOUNTING HEIGHT	BRACKET LENGTHS IN FEET CATALOG NUMBERS			BOLT CIRCLE	NOMINAL SHAFT SIZE
	10 FEET	12 FEET	15 FEET		
26'-0"	13225L10	13225L12	13225L15	11"	8"x4"x25'-0"
28'-6"	13227L10	13227L12	13227L15	11"	8"x4"x27'-6"
31'-0"	13230L10	13230L12	13230L15	11"	8"x4"x30'-0"
33'-6"	13232L10	13232L12	13232L15	11"	8"x4"x32'-6"
36'-0"	13235L10	13235L12	13235L15	11"	8"x4"x35'-0"

### POLE TYPE 1-T — BRACKET STYLE "L"

26'-0"	1T3225L10	1T3225L12	1T3225L15	15"	8"x4"x23'-4"
28'-6"	1T3227L10	1T3227L12	1T3227L15	15"	8"x4"x25'-10"
31'-0"	1T3230L10	1T3230L12	1T3230L15	15"	8"x4"x28'-4"
33'-6"	1T3232L10	1T3232L12	1T3232L15	15"	8"x4"x30'-10"
36'-0"	1T3235L10	1T3235L12	1T3235L15	15"	8"x4"x33'-4"

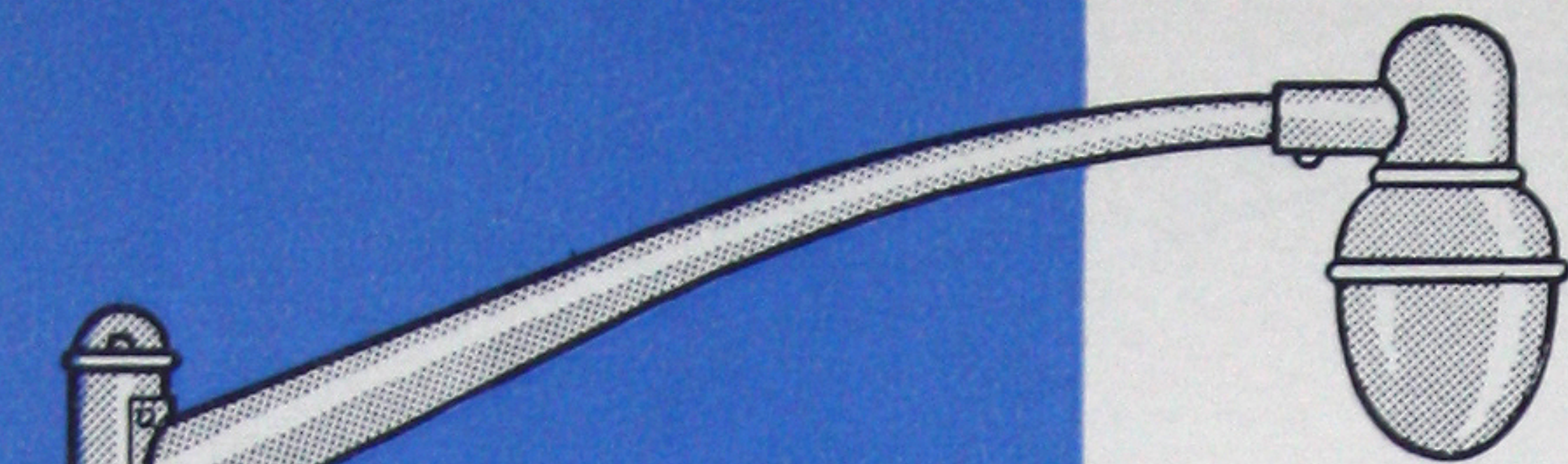
- Note 1. All Pole numbers include four 1 by 36-inch galvanized steel Anchor Bolts for each Pole.
- Note 2. All Pole numbers can be supplied with Twin Brackets. Specify "Twin" after catalog number.
- Note 3. Standard shaft wall thickness  $\frac{3}{16}$ -inch. (See SPECIFICATIONS, page 12.) (Other wall thicknesses available on special order.)
- Note 4. Alloys and tempers of all parts listed in SPECIFICATIONS, page 12.
- Note 5. Mounting heights given, indicate distance from top of foundation to center line of Bracket where luminaire attaches.
- Note 6. Brackets normally supplied with  $1\frac{1}{4}$ -inch slip-fitter end. May also be furnished in 2-inch slip-fitter, 2-inch threaded end, or  $1\frac{1}{4}$ -inch threaded end if specified.
- Note 7. For Bracket mounting details and base dimensions, see DETAILS, page 10.
- Note 8. Handholes and other accessories available. See page 11.







## STREET LIGHTING STANDARDS



### LIGHTING STANDARDS 1 and 1-T Bracket Style "S"

#### POLE TYPE 1 — BRACKET STYLE "S"

NOMINAL MOUNTING HEIGHT	BRACKET LENGTHS IN FEET CATALOG NUMBERS				BOLT CIRCLE	NOMINAL SHAFT SIZE
	3 FEET	4 FEET	6 FEET	8 FEET		
21'-0"	12420S3	12420S4	.....	.....	9½"	6"x4"x20'-0"
21'-0"	12820S3	12820S4	12820S6	12820S8	10"	7"x4"x20'-0"
23'-6"	12822S3	12822S4	12822S6	12822S8	10"	7"x4"x22'-6"
26'-0"	.....	12825S4	12825S6	12825S8	10"	7"x4"x25'-0"
26'-0"	.....	13225S4	13225S6	13225S8	11"	8"x4"x25'-0"
28'-6"	.....	13227S4	13227S6	13227S8	11"	8"x4"x27'-6"
31'-0"	.....	13230S4	13230S6	13230S8	11"	8"x4"x30'-0"
33'-6"	.....	13232S4	13232S6	13232S8	11"	8"x4"x32'-6"
36'-0"	.....	13235S4	13235S6	13235S8	11"	8"x4"x35'-0"

#### POLE TYPE 1-T — BRACKET STYLE "S"

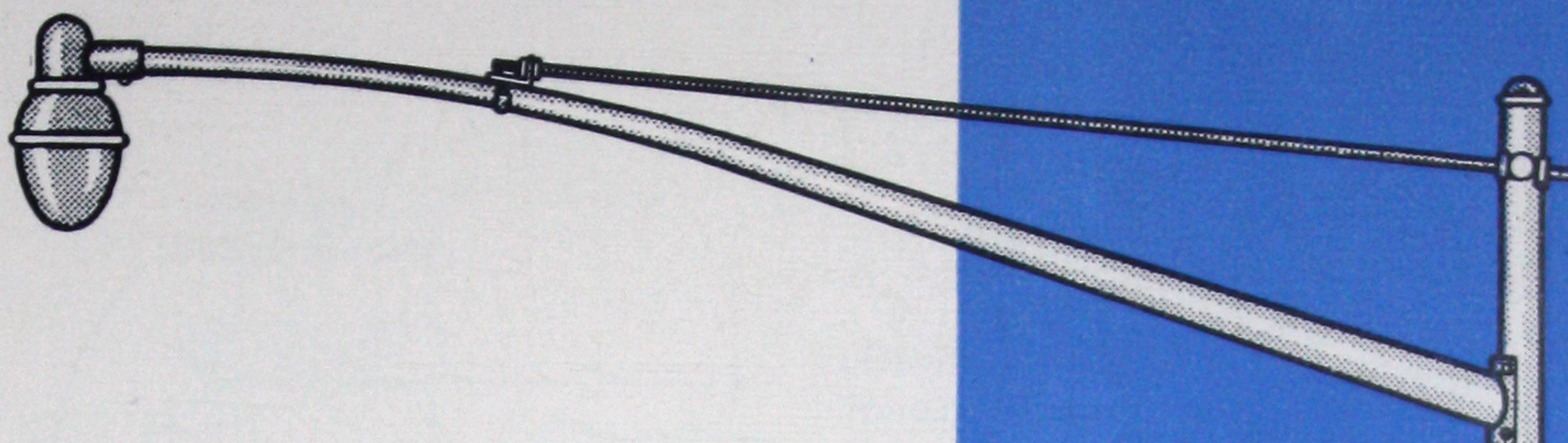
21'-0"	1T2820S3	1T2820S4	1T2820S6	1T2820S8	15"	7"x4"x18'-4"
23'-6"	1T2822S3	1T2822S4	1T2822S6	1T2822S8	15"	7"x4"x20'-10"
26'-0"	.....	1T2825S4	1T2825S6	1T2825S8	15"	7"x4"x23'-4"
26'-0"	.....	1T3225S4	1T3225S6	1T3225S8	15"	8"x4"x23'-4"
28'-6"	.....	1T3227S4	1T3227S6	1T3227S8	15"	8"x4"x25'-10"
31'-0"	.....	1T3230S4	1T3230S6	1T3230S8	15"	8"x4"x28'-4"
33'-6"	.....	1T3232S4	1T3232S6	1T3232S8	15"	8"x4"x30'-10"
36'-0"	.....	1T3235S4	1T3235S6	1T3235S8	15"	8"x4"x33'-4"

- Note 1. All Pole numbers include four 1 by 36-inch galvanized steel Anchor Bolts for each Pole.
- Note 2. All Pole numbers can be supplied with Twin Brackets. Specify "Twin" after catalog number.
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- Note 7. For Bracket mounting details and base dimensions, see DETAILS, page 10.
- Note 8. Handholes and other accessories available. See page 11.

POLE TYPE No. 1 Standard Base      POLE TYPE No. 1-T Transformer Base



# STREET LIGHTING STANDARDS



## LIGHTING STANDARDS 1 and 1-T Bracket Style "Y"

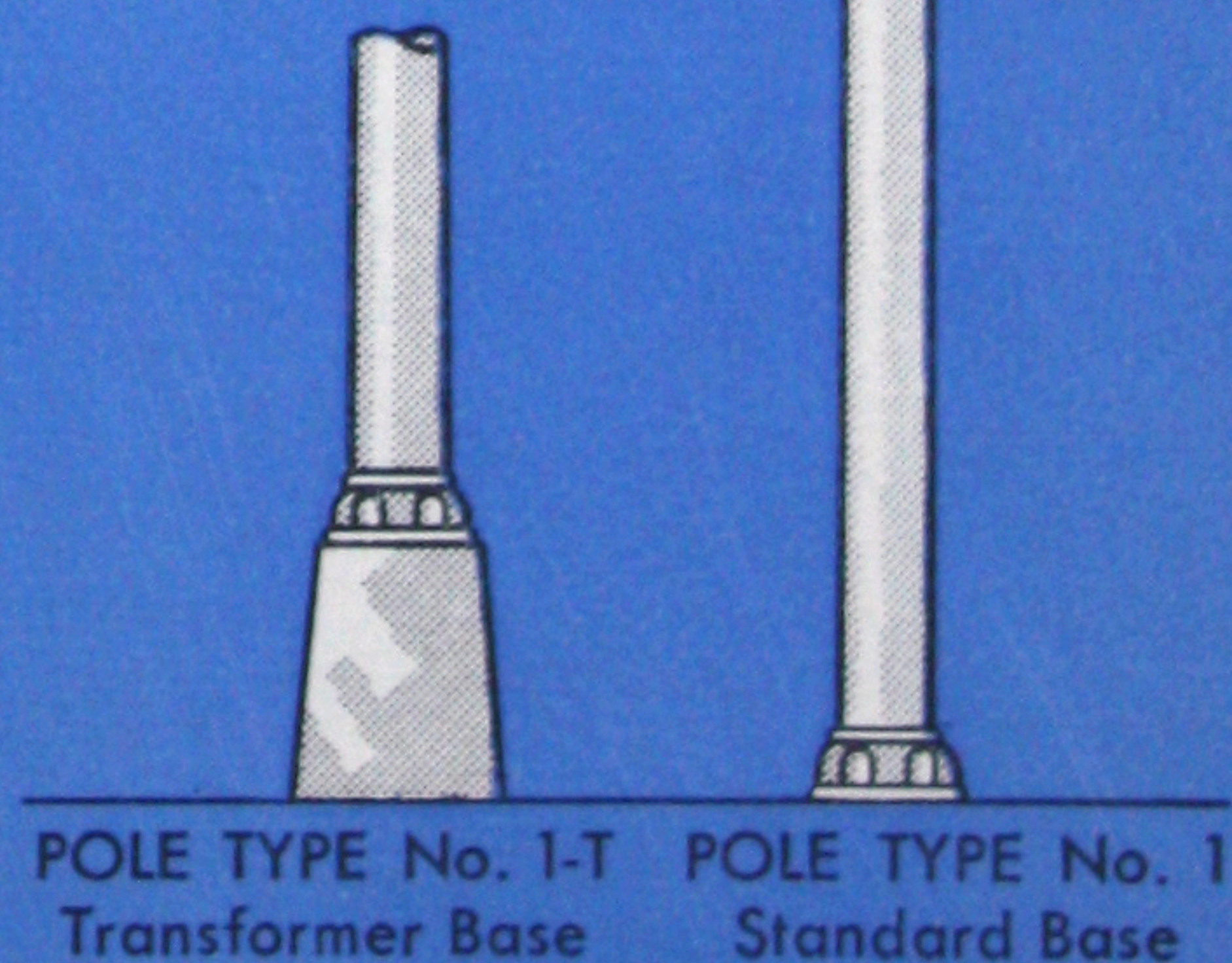
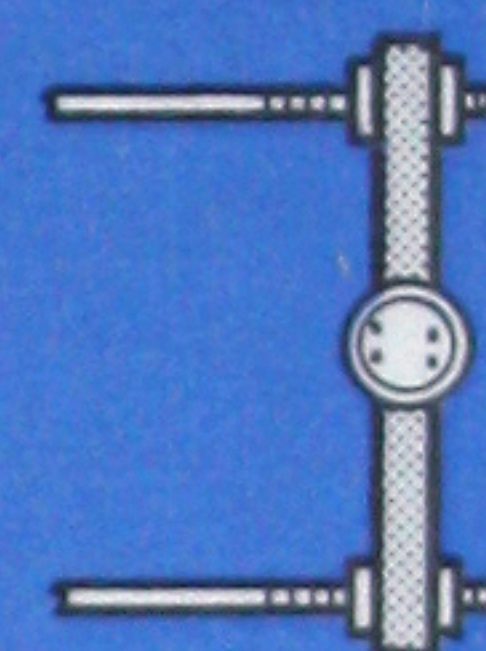
### POLE TYPE 1 — BRACKET STYLE "Y"

NOMINAL MOUNTING HEIGHT	BRACKET LENGTHS IN FEET CATALOG NUMBERS			BOLT CIRCLE	NOMINAL SHAFT SIZE
	10 FEET	12 FEET	15 FEET		
26'-0"	13225Y10	13225Y12	13225Y15	11"	8"x4"x25'-0"
28'-6"	13227Y10	13227Y12	13227Y15	11"	8"x4"x27'-6"
31'-0"	13230Y10	13230Y12	13230Y15	11"	8"x4"x30'-0"
33'-6"	13232Y10	13232Y12	13232Y15	11"	8"x4"x32'-6"
36'-0"	13235Y10	13235Y12	13235Y15	11"	8"x4"x35'-0"

### POLE TYPE 1-T — BRACKET STYLE "Y"

26'-0"	1T3225Y10	1T3225Y12	1T3225Y15	15"	8"x4"x23'-4"
28'-6"	1T3227Y10	1T3227Y12	1T3227Y15	15"	8"x4"x25'-10"
31'-0"	1T3230Y10	1T3230Y12	1T3230Y15	15"	8"x4"x28'-4"
33'-6"	1T3232Y10	1T3232Y12	1T3232Y15	15"	8"x4"x30'-10"
36'-0"	1T3235Y10	1T3235Y12	1T3235Y15	15"	8"x4"x33'-4"

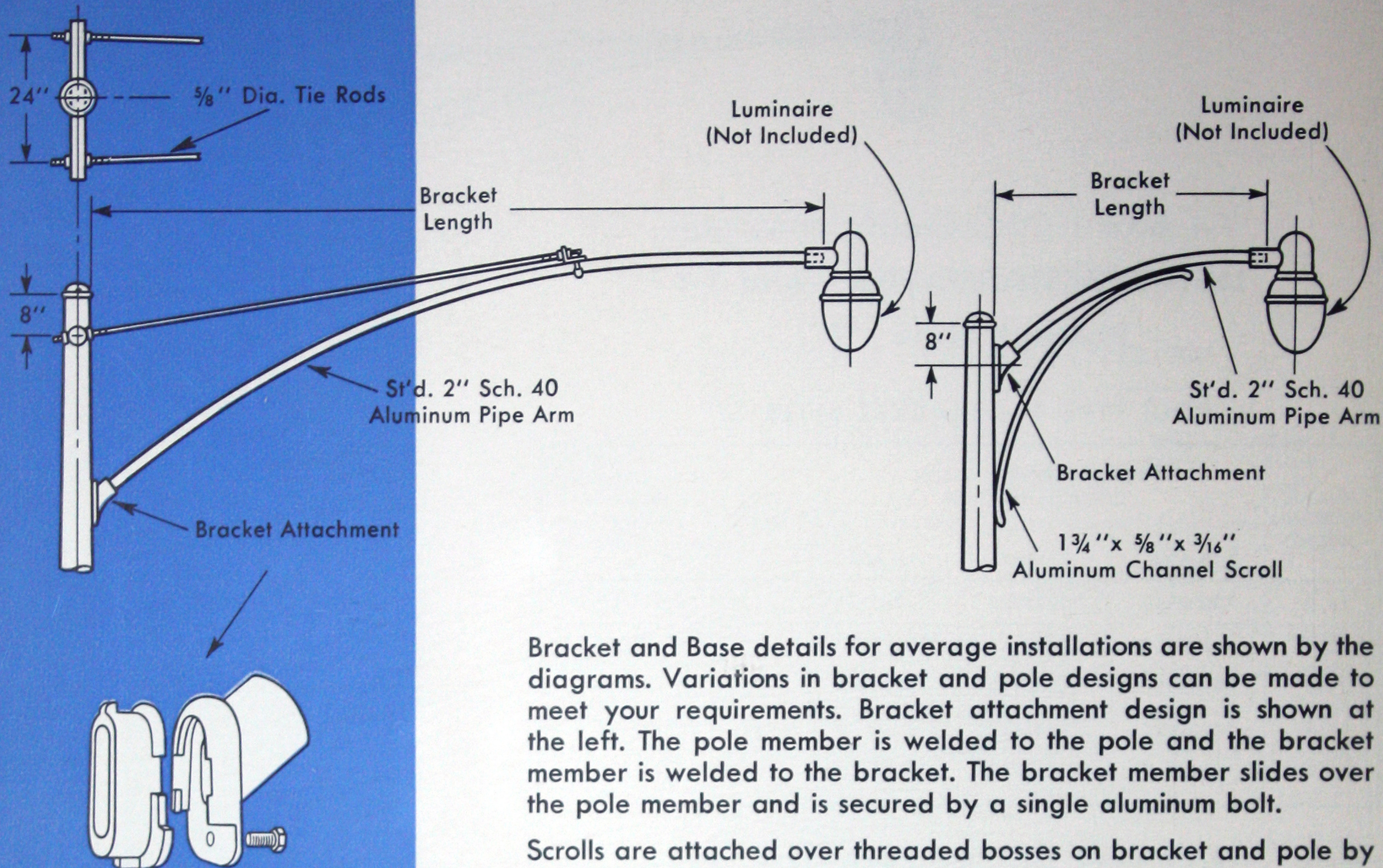
- Note 1. All Pole numbers include four 1 by 36-inch galvanized steel Anchor Bolts for each Pole.
- Note 2. All Pole numbers can be supplied with Twin Brackets. Specify "Twin" after catalog number.
- Note 3. Standard shaft wall thickness  $\frac{3}{16}$ -inch. (See SPECIFICATIONS, page 12.) (Other wall thicknesses available on special order.)
- Note 4. Alloys and tempers of all parts listed in SPECIFICATIONS, page 12.
- Note 5. Mounting heights given, indicate distance from top of foundation to center line of Bracket where luminaire attaches.
- Note 6. Brackets normally supplied with  $1\frac{1}{4}$ -inch slip-fitter end. May also be furnished in 2-inch slip-fitter, 2-inch threaded end, or  $1\frac{1}{4}$ -inch threaded end if specified.
- Note 7. For Bracket mounting details and base dimensions, see DETAILS, page 10.
- Note 8. Handholes and other accessories available. See page 11.







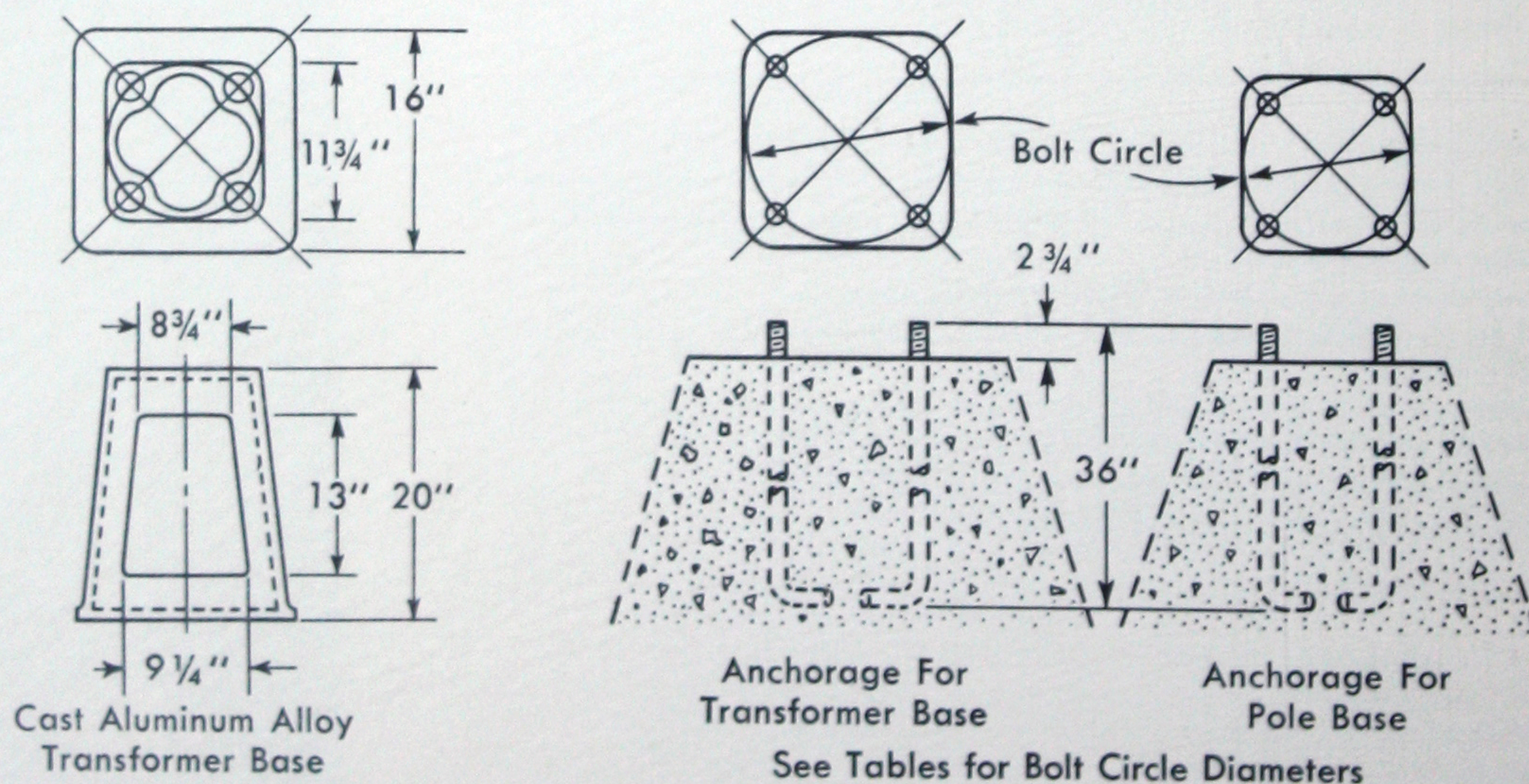
## BRACKET AND BASE DETAILS — STREET LIGHTING STANDARDS



Bracket and Base details for average installations are shown by the diagrams. Variations in bracket and pole designs can be made to meet your requirements. Bracket attachment design is shown at the left. The pole member is welded to the pole and the bracket member is welded to the bracket. The bracket member slides over the pole member and is secured by a single aluminum bolt.

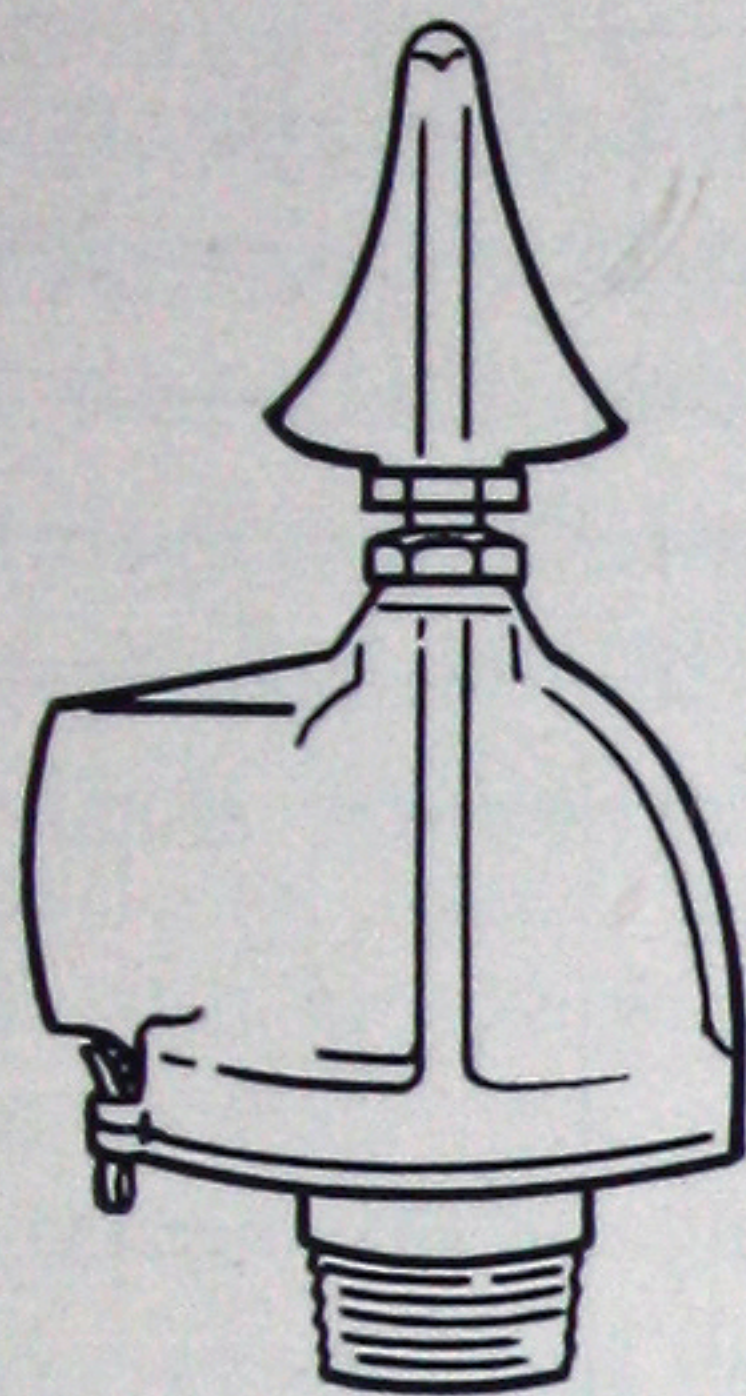
Scrolls are attached over threaded bosses on bracket and pole by aluminum cap screws.

## BASE DIMENSIONS AND INSTALLATION DETAILS

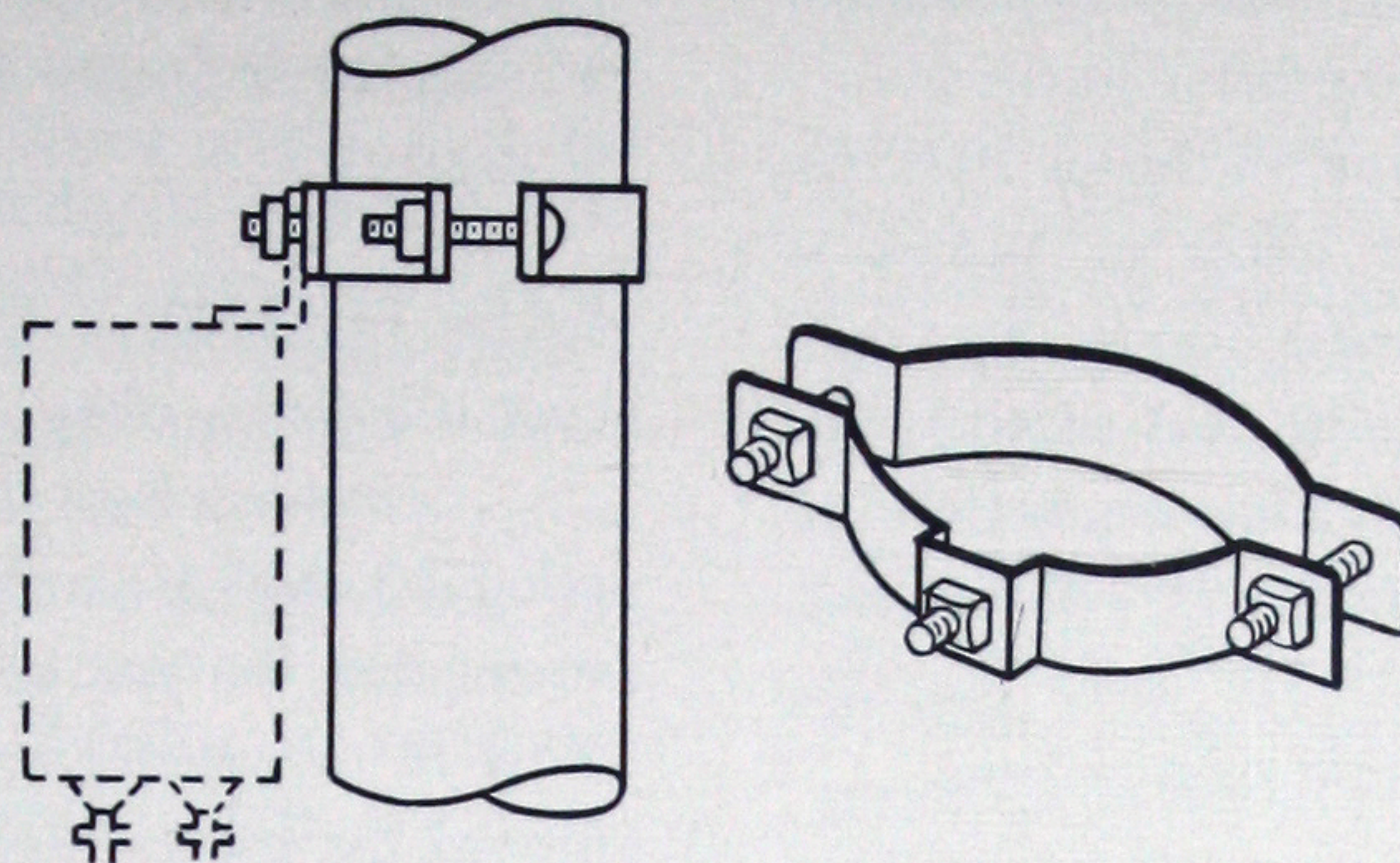




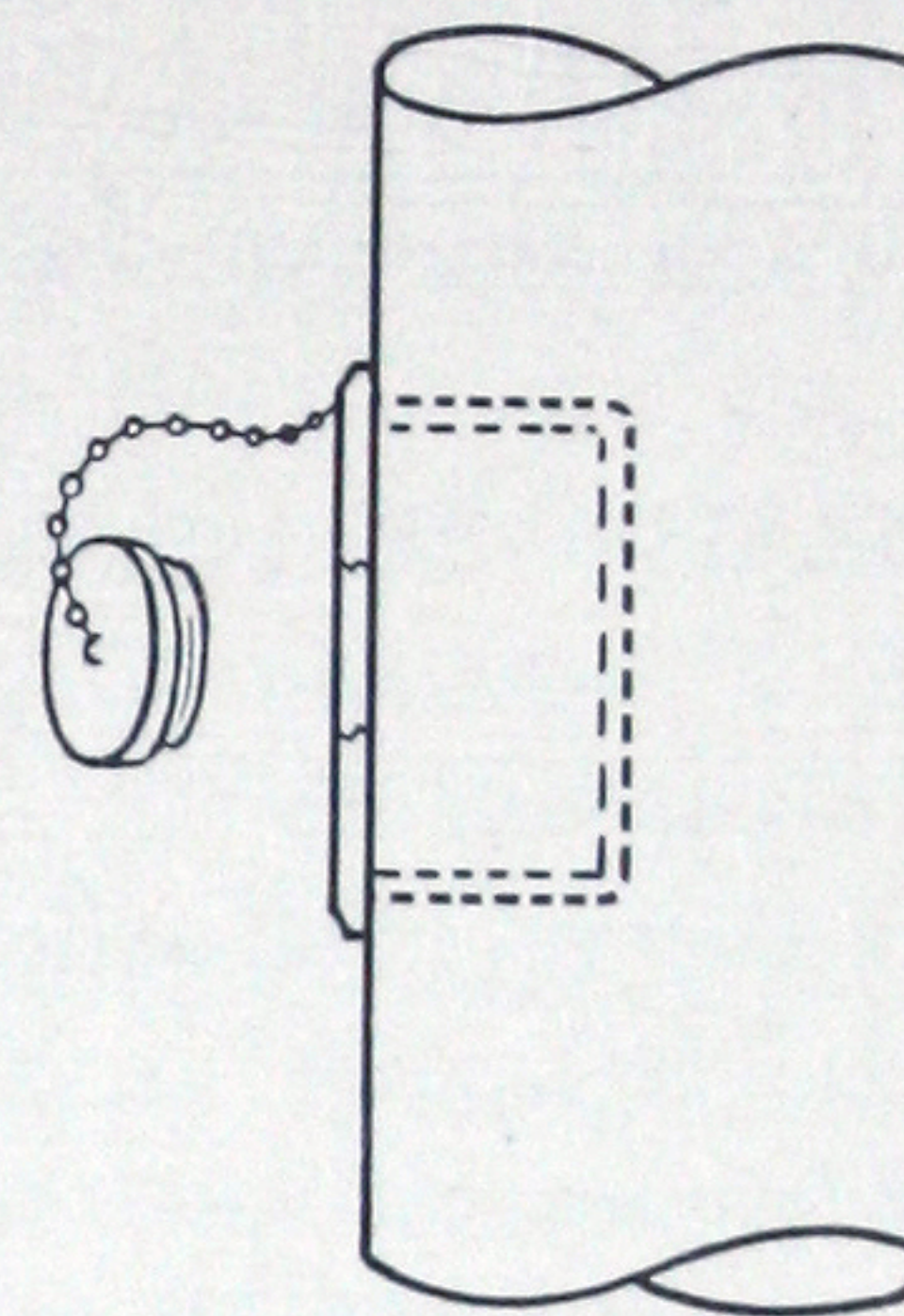
## HAPCO STREET LIGHTING STANDARD ACCESSORIES



Hubbard Patented Levelite — Aluminum Alloy — for 1 1/4-inch and 2-inch pendant luminaires or brackets. Permits leveling of luminaire after installation.

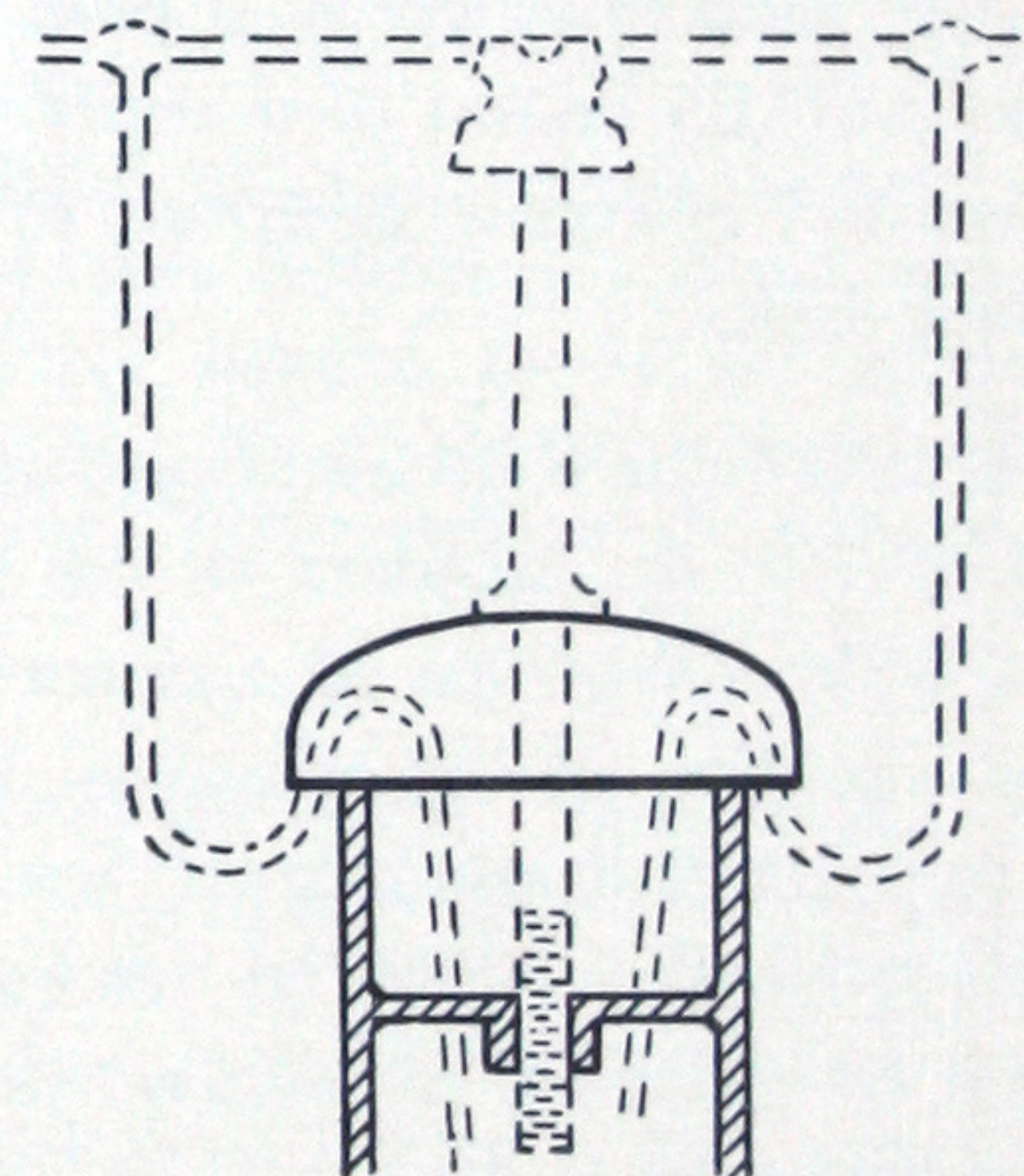


Pole Band arrangement for attaching ballast or other accessories to Hapco Standards.

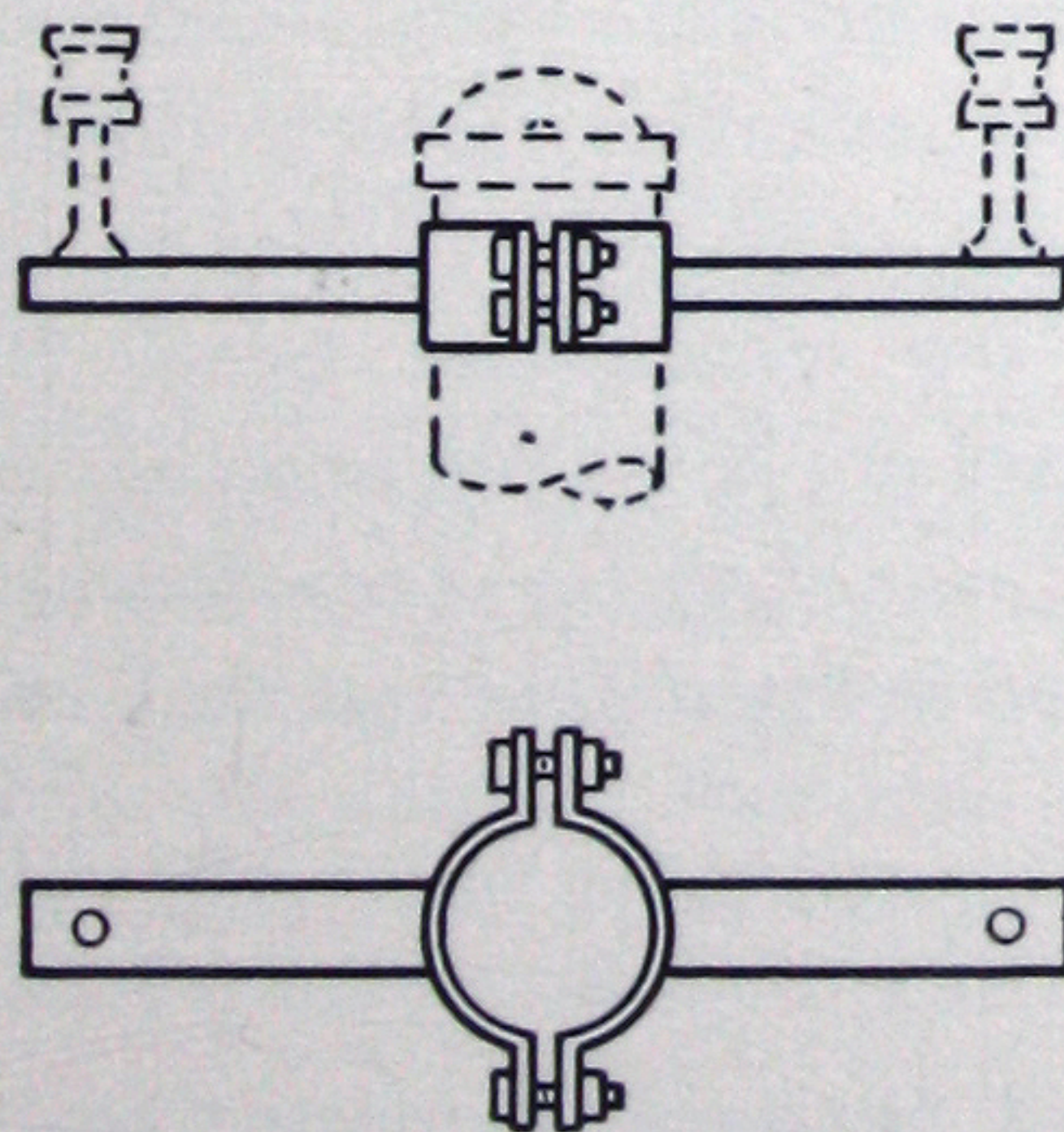


Festoon outlet receptacles can be located to meet your specifications.

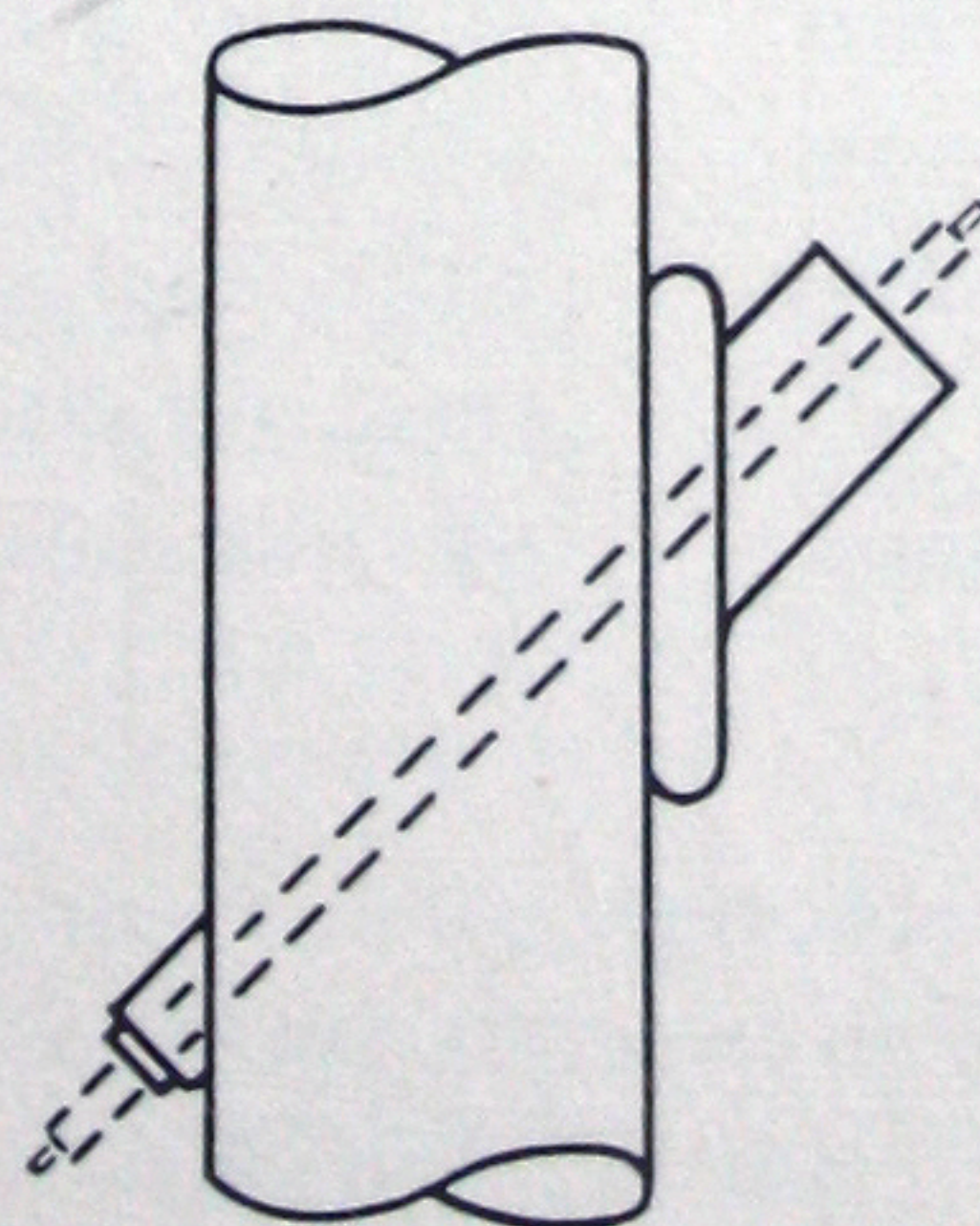
Of the many HAPCO accessories that are available, those illustrated are self-explanatory. They are items that have been furnished in the past to meet most common construction needs. Most accessories can be varied to meet your individual requirements and other items not listed can be furnished. HAPCO engineers will be glad to cooperate in designing accessories to solve your individual problems.



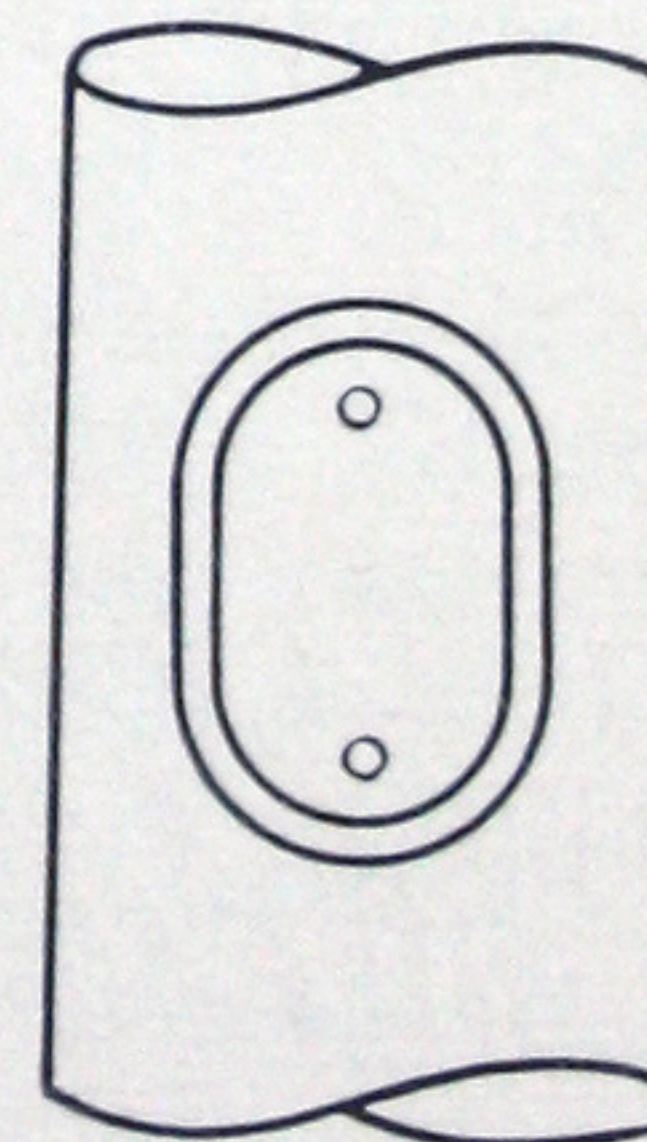
Pole Top Pin provision is available with ample lead-in access.



Spreader Arm for two-wire parallel lighting circuits. Available for various diameter standards.



Pole Wire inlet, 45 degree.



Hand-holes are 4 by 6 inches with reinforcing frame. Furnished extra on request for Type No. 1 Poles.





## HAPCO POLE SPECIFICATIONS

**MASTS** — The mast shall be a round, tapered, seamless shaft, measuring . . . . . inches O.D. at the base and . . . . . inches O.D. at the top. The nominal wall thickness shall be  $\frac{3}{16}$ -inches. There shall be no welded joints or seams in any portion of the mast above the base flange. Material for the mast shall be aluminum alloy 63S and after fabrication, it shall have mechanical properties equivalent to the T6 temper. The shaft shall be capable of withstanding a transverse load of 500 lbs., applied 18" from the top, without fracture or apparent deformation of any part.

**BRACKET ARMS** — The bracket arm shall be made from alloy 63S-T6, 2" schedule 40 pipe with a luminaire end formed to accommodate a . . . . . slip fitter as specified. Ornamental scroll underbrace shall be made from alloy 63S-T5,  $1\frac{3}{4}$ " x  $\frac{5}{8}$ " x  $\frac{3}{16}$ " bulb edge channel or equivalent. When tie rods are required, they shall be made from  $\frac{5}{8}$ " round alloy 61S-T6 rod.

The bracket arm shall be welded to a bracket adapter, made from a cast aluminum alloy 356-T6. The bracket adapter shall hook on to a pole adapter which is welded to the shaft by means of a circumferential weld. The matching bracket and pole adapters are to be secured by a  $\frac{1}{2}$ " machine bolt.

The bracket arm shall be capable of withstanding a vertical load of 100 lbs. applied at the point of luminaire attachment, without fracture or apparent permanent deformation of any portion of the structure. The bracket arm shall be capable of withstanding a horizontal load of 50 lbs., applied at the point of luminaire attachment, without failure or apparent permanent deformation of any portion of the structure.

**TRANSFORMER BASE** — The transformer base shall be made from cast alloy 356-T6 and shall be constructed to receive the base flange by means of four anchor bolts. Overall height of the transformer base shall be 20", with a hand hole opening measuring  $13$ " x  $9\frac{1}{4}$ " x  $8\frac{3}{4}$ ". The hand hole opening shall be provided with a cover made from cast aluminum alloy 43, and attachment to the transformer base shall be accomplished by means of  $\frac{1}{4}$ " Phillips head machine screws. The transformer base shall

be connected to the concrete foundation by means of four 1" diameter anchor bolts, with a bolt circle spacing of 15" in diameter.

**BASE FLANGE** — The base flange shall be made from cast aluminum alloy 356-T4 with a bolt circle diameter of . . . . . inches. Four bolt covers made from cast aluminum alloy 43 shall be provided. The base flange shall be bored to receive the extreme lower end of the lighting standard mast to an accurate fit and the connection shall be completed by circumferential welding.

**CAP** — An ornamental cap made from cast aluminum alloy 43 shall be provided. The cap is to be secured to the pole by means of three  $\frac{1}{4}$ " Phillips head machine screws.

**HAND HOLE** — If a hand hole is required, it shall provide an opening of 6" x 4". The hole shall be reinforced by a frame made from cast aluminum alloy 356-T6, with a removable cover provided.

**NUTS, BOLTS, AND WASHERS** — All nuts, bolts, and washers used in the fabrication of the lighting standard shall be made from aluminum alloy 24S-T4, with alumilite No. 204. These parts may be made from 18-8 stainless steel.

**WELDING** — All welding shall be performed by the inert gas shielded arc method, using aluminum alloy 43S filler wire. All welds shall be free from cracks and porosity.

**SURFACE FINISH** — External surfaces of all wrought parts of the lighting standard assembly shall be furnished with a satin type finish. Painting of any part of the assembly is not required.

**ANCHORAGE** — Each standard shall be provided with four 1" diameter anchor bolts 36" long, with a 4" right angle bend. When a transformer base is required, four 1" diameter anchor bolts shall be provided to secure the lighting standard to the transformer base. Nuts, lock washers, and flat washers are to be furnished for all anchor bolts. Anchor bolts and nuts shall be made from hot rolled steel. All steel parts used in the anchorage shall be double-dip hot galvanized.

NOTE: The above specifications are subject to change without notice. Hubbard Aluminum Products Company engineers are working continually to improve HAPCO Products. Also, the technology of the Aluminum Industry is advancing rapidly. HAPCO therefore reserves the right to change the above specifications without notice as improvements are developed.



## TECHNICAL INFORMATION

**CORROSION RESISTANCE** — Aluminum alloys are inherently resistant to atmospheric corrosion because the aluminum oxides that form on exposed surfaces are extremely hard and effectively seal the surface of the metal against further advancement of corrosion. Extensive laboratory and field tests provide conclusive proof that the aluminum alloys used in HAPCO standards and brackets, are more resistant to the most common types of severe atmospheric corrosive conditions than steel. Consequently, HAPCO standards and brackets can be installed without painting or further corrosion protective maintenance.

Aluminum is particularly well adapted to those areas surrounding heavy industrial sites where sulphur compounds are unusually corrosive to steel. HAPCO poles are relatively unaffected by these sulphur compounds. Many engineers bring up the question of seacoast corrosion and whether aluminum alloys can be used in these locations. HAPCO poles can be used in seacoast areas without painting. Test data are available to prove that unpainted aluminum alloys will outlast steel by far under these very corrosive conditions. The statement that aluminum poles are relatively unaffected by salt atmosphere does not imply that they are absolutely free from corrosion. Some corrosion may occur, however, it is usually so slight that any reduction in the original strength of the pole will hardly be detectable.

This light corrosive action takes place while the transparent film of aluminum oxide is building up on the metal surface, and after a period of a year to two years, this protective film has adequately formed so that any further serious corrosion is eliminated. This same self-sealing action provides resistance to calcium chloride, which is widely used in street and highway maintenance, and also provides protection under conditions where certain industrial chemicals may be present in appreciable concentrations.

The HAPCO Engineering Department will be glad to provide a detailed discussion supported by test data for any specific corrosion problem you may have.

**LIGHT WEIGHT** — HAPCO Aluminum Lighting Standards and brackets weigh only a little more than one-third as much as steel standards of comparable dimensions and strength and, of course, are as little as one-tenth the weight of concrete or cast iron standards. For instance, the HAPCO pole No. 1T2825B8, which is a nominal 25 ft. standard with an eight foot bracket and transformer base, weighs approximately 167 lbs. A comparable steel pole would weigh approximately 425 lbs., and a concrete standard of similar dimensions would weigh over 1000 lbs.

This lightness of weight means savings in handling, transportation to job site and installation because it is possible to use very light equipment and less man power to erect poles. One of our users reports twenty-two Hapco poles installed in one day by four men with a light truck, compared with nine steel poles per day installed by the same crew with the same truck — a saving of sixty percent in labor.

Many users tell us that the difference in cost between aluminum standards and steel or other types of standards is entirely saved by the time the luminaire is placed in service because of these economies in handling and the elimination of painting at the time of installation.

**STRENGTH** — HAPCO poles exhibit all the strength that is normally required from a street lighting standard even though they are light in weight. Heat-treated aluminum alloys are used exclusively in the fabrication of poles and brackets with the exception of ornamental caps which are non-load carrying members. All HAPCO Street Lighting Standards have shafts which are entirely of one piece, seamless construction. There are no longitudinal welds and no transverse joints. HAPCO is the only manufacturer whose complete line of standards is entirely one piece. This exclusive feature is made possible by our special machinery on which it is possible to produce seamless, tapered, one piece poles up to 40 ft. in length and 10 inches in diameter. Also available is an oven which can heat-treat poles up to 40 ft. in length. These facilities are particularly important because it puts HAPCO in a position of being able to produce a uniform, heat-treated pole of the highest quality.

HAPCO poles are normally designed to withstand winds in excess of 100 miles per hour without taking any permanent set as a direct result of wind. The normal strength requirements for ornamental street lighting specifications can easily be met by HAPCO poles. A complete set of Specifications for HAPCO Poles is described on the opposite page and our engineering department will be very happy to discuss these in detail if it is so desired. Also, deflections and ultimate strengths of all types of HAPCO poles can be obtained upon application to our Pittsburgh office or any of the District Sales offices.

HAPCO poles are designed to meet standardized street lighting strength requirements including certain types of overhead construction. Also, special poles are available for use as corner and strain poles. Our engineering department will provide additional information as may be required.

**FABRICATING TECHNIQUES AND FACILITIES** — As previously mentioned, HAPCO is equipped with a specially designed machine utilizing the DEWEY Process by which it is possible to produce tapered or configured tubes as long as 40 ft. The heat-treating oven is also a very specialized piece of equipment which is completely automatic, thus assuring a consistently uniform product. Welding facilities are of the latest design available on the market. The Airco-matic welding machine which utilizes the inert gas shielded arc process is used exclusively. This type of equipment which meets the exacting welding qualifications of the U. S. Navy, assures strong, sound welds which are free from cracks and porosity.

**SURFACE FINISH** — HAPCO poles are supplied with a satin type finish which is accomplished by mechanical grinding. This process provides a uniform mat finish which makes a very attractive installation. Each pole is also individually wrapped with a weather resistant, creped kraft paper which insures that the pole will be installed on the job site, free from scratches or other handling marks. Of course, when HAPCO aluminum standards are freshly installed, they will have a metallic lustre which will gradually tone down to a soft silver-gray shade. The period of time over which this transition occurs, depends somewhat upon the locality in which the poles or brackets are installed.

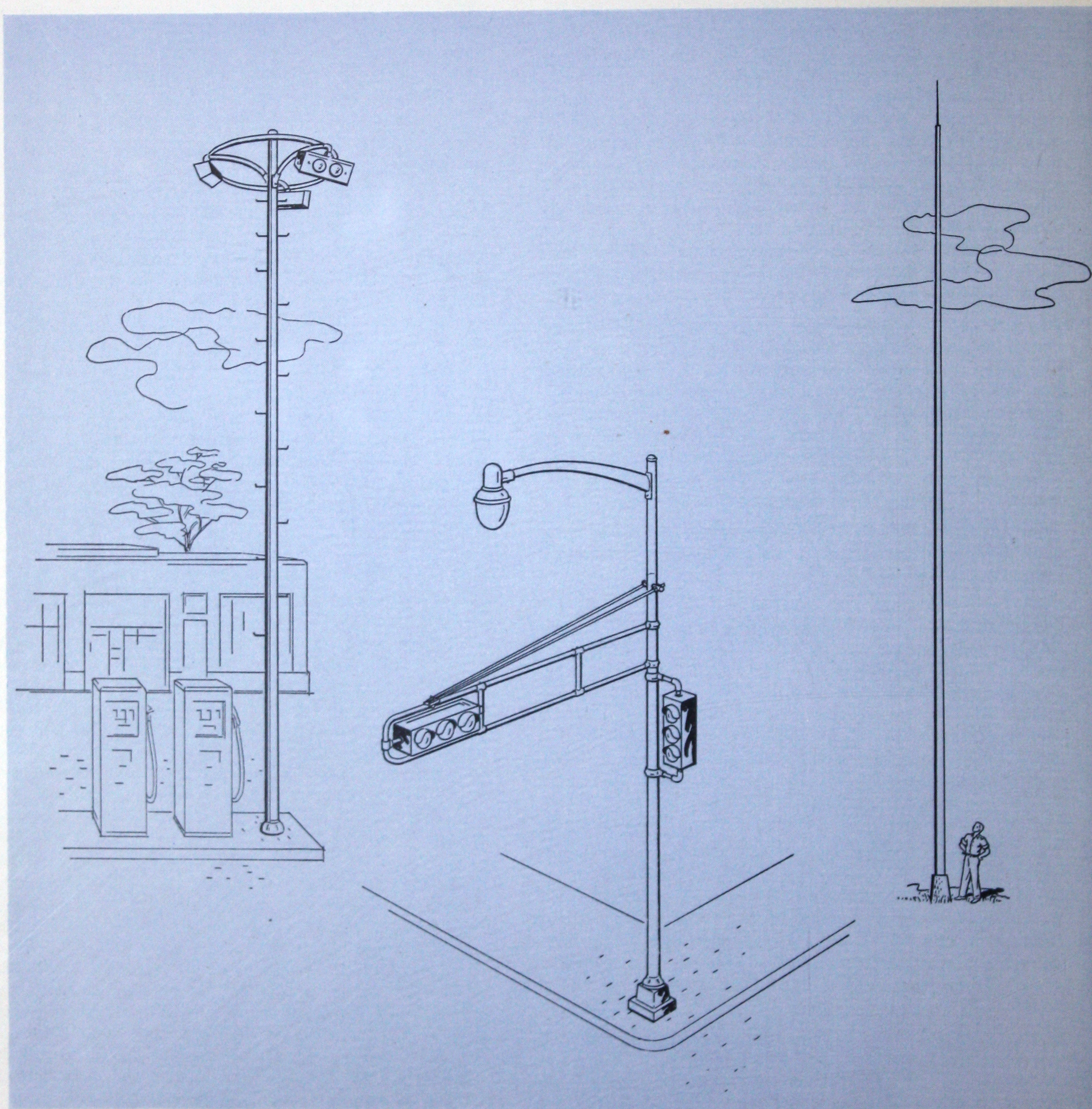




## SPECIAL PURPOSE PRODUCTS

Hubbard Aluminum Products Company is in a position to furnish special purpose standards and brackets with accessory fittings as illustrated below.

Floodlighting Standards, Traffic Signals, Lightning Protection, Flag Poles, Lamp Posts, etc., for dwellings can be made to meet your requirements.









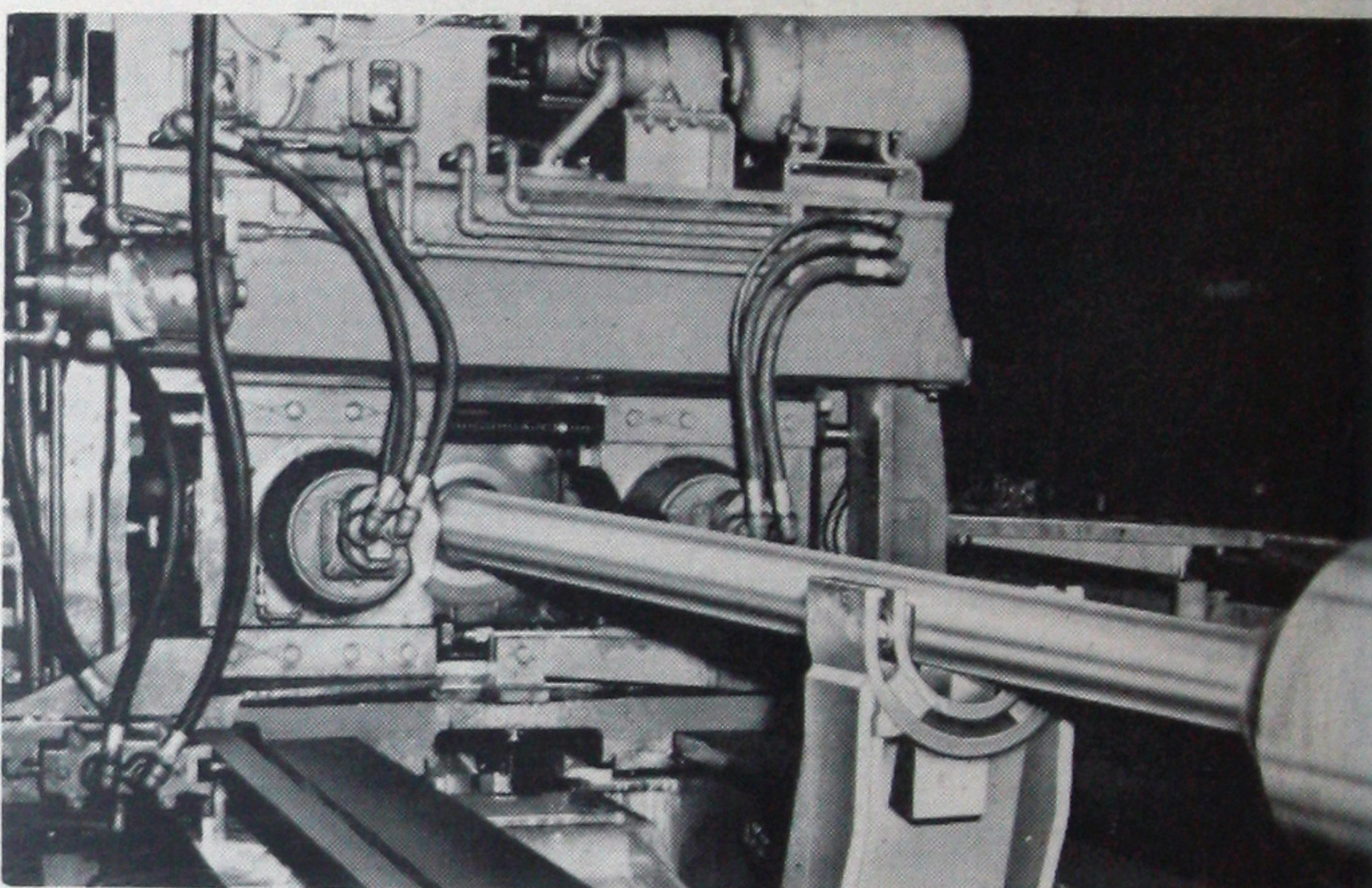
# HAPCO

## FACILITIES SERVING THE ELECTRICAL INDUSTRY

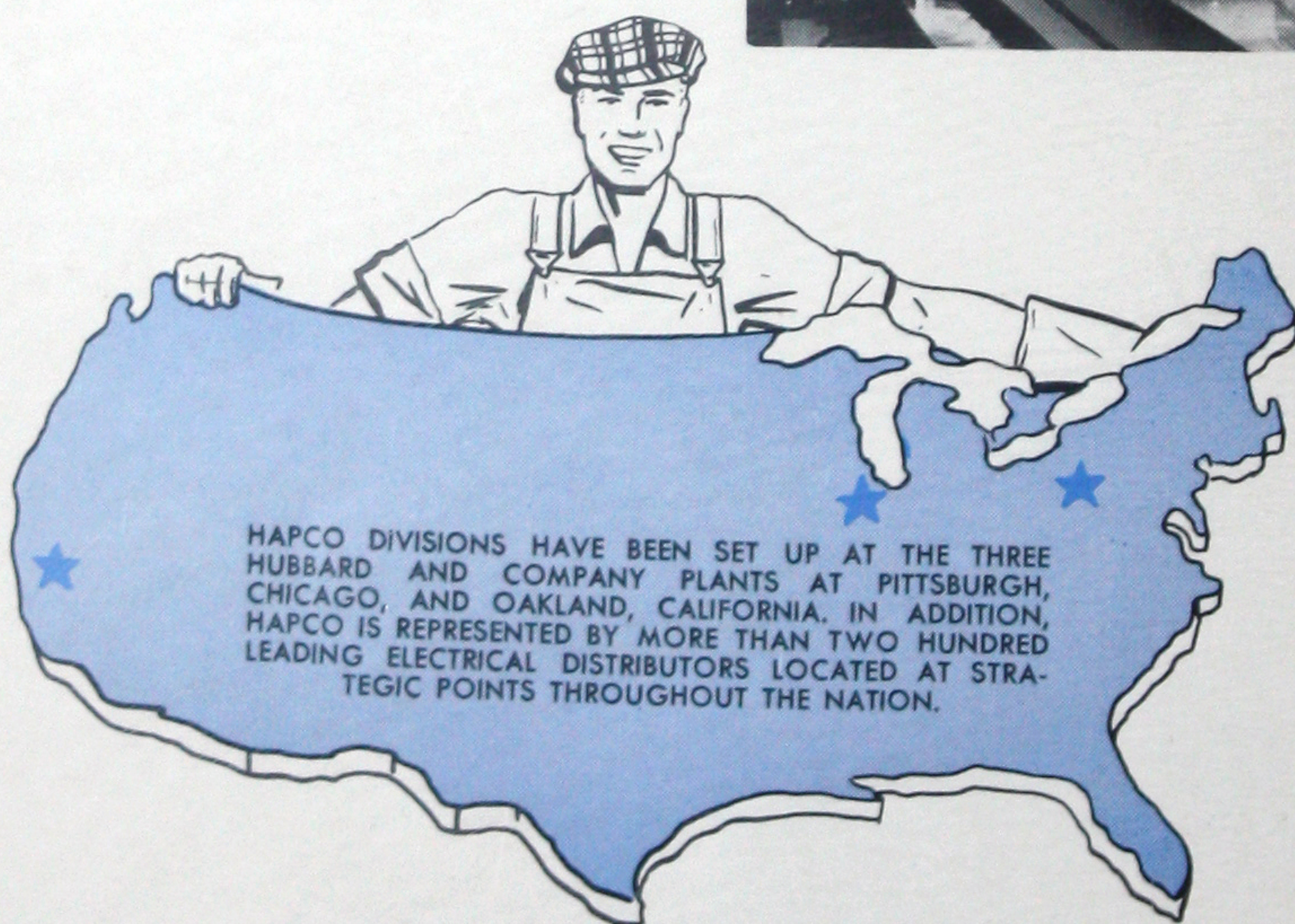
*Extensive Manufacturing Facilities* ▶



*Modern Fabricating Equipment* ▶



*Comprehensive Stocks Conveniently  
Located for Distribution* ▼



### HUBBARD ALUMINUM PRODUCTS COMPANY

MANUFACTURER OF HAPCO QUALITY ALUMINUM PRODUCTS



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